



Private infrastructure financing in developing countries

Five challenges, five solutions

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A teal-colored circle containing the text 'Key messages' in white.

Key messages

This paper presents challenges in the financing of infrastructure in developing countries and suggests five solutions:

- **Re-orientate international financial institutions (IFIs)** to adopt 'originate-to-distribute' business models and focus on early-stage financing and project development.
- **Deliver more 'bankable' projects** by scaling up successful project-preparation facilities and by developing capacity for 'state-of-the-art' national infrastructure planning and execution.
- **Develop syndication and securitisation, using 'mega-funds' as a key financing model** to crowd in institutional investors.
- Deliver affordable, more flexible and longer-tenure **foreign exchange (FX) and political risk hedging** by scaling up existing successful IFI seed-funded providers.
- **Deepen pension and life-insurance markets in domestic economies** to deliver local-currency financing of infrastructure.

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Acronyms

AfDB	African Development Bank
CDC	Current Exchange Fund
DRC	Democratic Republic of the Congo
DFI	Development finance institution
EIB	European Investment Bank
EBRD	European Bank for Reconstruction and Development
FCAS	Fragile and conflict-affected states
FX	Foreign-exchange
GIF	Global Infrastructure Facility
GDP	Gross domestic product
ICT	Information, communications and technology
IFI	International financial institution
IFC	International Finance Corporation
LIC	Low-income country
LMIC	Lower middle-income country
MCPP	Managed Co-Lending Portfolio Program
MDB	Multilateral development bank
MIC	Middle-income country
MIGA	Multilateral Investment Guarantee Agency
NEPAD-IPPF	New Partnership for Africa's Development Infrastructure Project Preparation Facility
OECD	Organisation for Economic Cooperation and Development
OPIC	Overseas Private Investment Corporation
PSW	Private sector window
SAARC	South Asia Association for Regional Cooperation
UMIC	Upper middle-income country
UNECA	United Nations Economic Commission for Africa
WEF	World Economic Forum

Introduction

Infrastructure is a crucial driver of economic growth. In developing countries, however, there are significant infrastructure deficits. The G20 estimates that \$1.5 trillion will be required annually to plug these deficits and that the money will largely need to come from private sources.

In 2018, Argentina assumed the presidency of the G20. It has made mobilising private investment to address these needs a key goal. It has described doing so as “a win-win” that “requires international cooperation” and set goals for its presidency including “develop[ing] infrastructure as an asset class by improving project preparation, and addressing data gaps [in] their financial performance, improving the instruments designed to fund infrastructure projects and seeking greater homogeneity among them”. This leadership is welcome and promises to deliver significant progress.¹

However, although private investment in infrastructure in developing countries has grown significantly over the past 10 years, major challenges remain.² The first is that private investment has been concentrated in commercially attractive sectors and countries, so has not always matched development needs. Low-income countries (LICs), for example, which have the greatest need of infrastructure development, have received less than 2% of total private investment financing in the last decade. While on a par with relative gross domestic product (GDP), this is low. In addition, sectors vital to development, such as urban infrastructure, have seen insufficient funding. Furthermore, global private-finance flows to developing countries have declined since the ‘taper tantrums’ of 2014 and because of regulatory changes under Basel III and Solvency II.

Development institutions have responded by increasing vanilla lending and stepping up technical assistance while seeking to mobilise private finance through innovative policy, such as project-preparation facilities, the co-financing of funds and de-risking for private investors. Many of these initiatives have been successful, as the examples in this paper illustrate.

Even so – and this is the second challenge – private finance has not been galvanised on anything like the scale needed, despite there being a large pool of potential

investors eager to put money into the sector. There is reasonable consensus on the main barriers to investment:

- lack of ‘bankable’ projects
- difficulty of managing political and macroeconomic risk
- mismatch between the instruments being offered and the needs of institutional investors.

The first half of this publication provides an overview of the current state of global infrastructure financing and the major challenges facing it.

The second half explores five potential, complementary approaches to resolving them:

- First, international financial institutions (IFIs)³ **need to re-orientate their mandates to focus on those activities where they bring significant and unique value to infrastructure development.** These include project planning, the navigation of complex governance and regulatory frameworks, making a positive contribution to the broader investment environment, the provision of financing, and partnership with construction firms and governments to bring projects to the operational phase. However, they do not yet possess the financial-structuring skills required to meet investor needs and need to move towards an ‘originate-to-distribute’ model (as opposed to a hold-to-maturity’ model) that could deliver greater financial additionality, especially in LICs.
- Second, **there needs to be an acceleration in the pipeline of ‘bankable’ projects.** Successful project-preparation facilities need to increase in scale, especially those that bring together a broad group of skills from IFIs, private financial institutions and construction and legal experts. International best practices could be better utilised in national infrastructure development, particularly when it comes to national infrastructure strategy and execution, supporting governments to engage more effectively with private finance, and introducing digital project preparation.
- Third, **syndication and securitisation need to become the predominant financing models for infrastructure,** so that there is more effective intermediation between IFI projects and the investment requirements of

1 See <https://g20.argentina.gob.ar/en/overview-argentinas-g20-presidency-2018>.

2 Middle-income countries (MICs) and LICs are defined as ‘developing’ in this paper.

3 IFIs are defined in this paper as multilateral development banks (MDBs), development finance institutions (DFIs) and bilateral donors.

institutional investors. Syndication and securitisation facilitate this through the financial restructuring of individual projects into portfolios of assets, which can be divided into tranches that meet the credit and liquidity requirements of institutional investors. In addition, they provide IFIs with an opportunity for capital recycling, reducing the need for capital replenishment. Furthermore, allowing greater engagement by private financial institutions and specialist funds – such as the recent MCPP-Infra fund led by the International Finance Corporation (IFC) and Eastspring Investments, the Asian asset-management business of Prudential plc – will allow for more effective and larger-scale distribution to global investors.

- Fourth, **there is a need for ‘fit-for-purpose’ hedging instruments for investors**, particularly to mitigate foreign-exchange (FX) and political risk. IFIs have successfully seed-funded specialist providers of such hedging, increasing the liquidity and availability of instruments. However, the instruments need to be cheaper, more flexible and longer in tenure. We would suggest that the innovative policy approaches be scaled up and that consideration be given to whether this area might warrant public subsidy to increase investor uptake.
- Fifth, **further development of pension and insurance markets in MICs** would provide an attractive source of local-currency financing for infrastructure. Policy

should support this through broad financial-market development, the expansion of financial access and the development of well-regulated pension and life-insurance industries.

This is a challenging agenda. IFIs will need to re-orientate their mandates to focus on delivering in their areas of key expertise and on ‘value added’ project preparation and early-stage financing. They will need to move to an ‘originate-to-distribute’ model for mature infrastructure assets. IFIs, investors and regulators need to partner on developing financing vehicles that can meet the needs of investors. Greater innovation (and IFI seed capital) is needed in relation to financing vehicles and hedging instruments. Finally, there needs to be well-judged domestic regulatory reform of pension and insurance markets.

Optimistically, as noted, the Argentinian presidency of the G20 has assumed leadership of this agenda, stating that ‘developing infrastructure as an asset class holds great promise to channel the savings of today into public infrastructure, efficient transportation services, basic sanitation, energy flows and digital connectivity that will make each person of today a global citizen and worker of tomorrow’.

We welcome Argentina’s leadership and urge support and participation in delivering on its promise and hope that this paper, and the dissemination events that accompany it, will contribute to this goal.⁴

⁴ The research supporting this paper has involved interviews with the investment community, including MDBs, IFIs and their associated ‘satellite’ investment vehicles, and private financiers such as commercial banks, private equity funds and consultants in the industry. It also draws on material from the G20/HM Treasury Infrastructure Finance Seminar held in London on 21 February 2018. Material is based on these interviews and the seminar unless otherwise referenced.

Challenge 1: Private finance is flowing to countries and sectors with strong fundamentals

Infrastructure is a crucial driver of economic growth. In developing countries, there are significant infrastructure deficits in many of those sectors vital to development, including energy, transport and urban infrastructure.

The G20 estimates that \$1–1.5 trillion annually is required to plug these gaps. Because development aid (defined as official development assistance, or ODA) is not increasing, it is unlikely to meet those needs, making mobilising private finance a necessity (ERD Research Team, 2015).

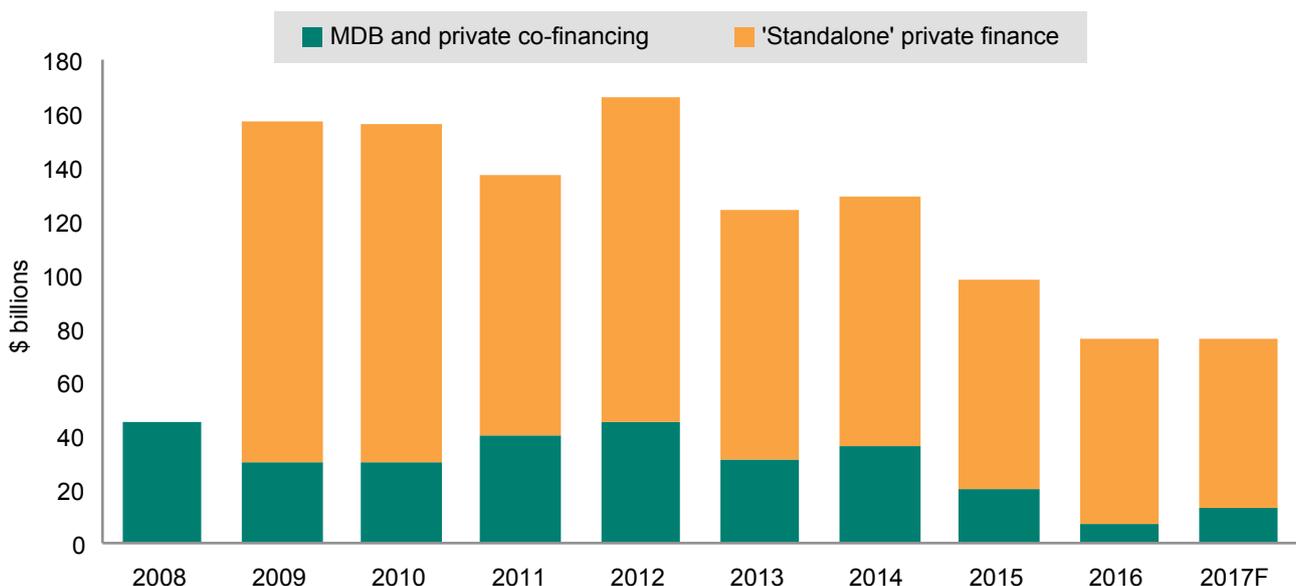
Private financing of infrastructure has been strong, but insufficient.

In principle, stimulating private investment in infrastructure should be achievable, because there is

significant – indeed, arguably, excessive – capital in the global economy looking for a suitable home.

This is reflected in the flows of private finance into infrastructure in developing countries, with an estimated \$1.5 trillion being invested between 2008 and 2017, according to institutional data (Figure 1). Furthermore, 'standalone' private financing (financing devoid of any public policy support) has dominated, accounting for 78% of total financing over the past decade, with just 20% being co-financed with IFIs (Figure 1). Even so, these levels of private finance are only 10% of what is needed.

Figure 1 Private infrastructure finance to developing countries (2008–2017): private financing has been strong, but pro-cyclical



Source: World Bank Private Participation in Infrastructure Database; International Bank for Reconstruction and Development (IBRD); International Development Association (IDA); Asian Development Bank (ADB); African Development Bank (AfDB)

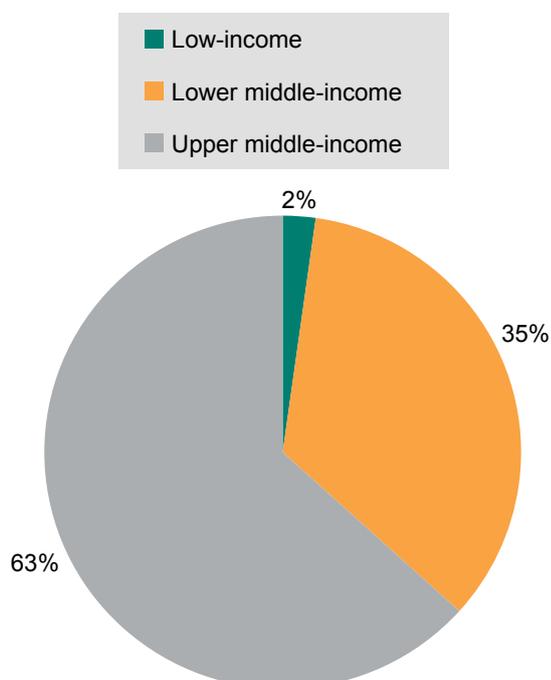
Recipient sectors and countries have strong investment fundamentals

Private finance has been concentrated in sectors and countries that offer ‘bankable’ opportunities. This is down to the fact that private finance flows to opportunities that are commercially attractive. The allure of an opportunity is determined by both the characteristics of the investment at the project level and the broader macroeconomic and investment environment.

Consequently, private financing to MICs has been strongest: these received an estimated 98% of all private infrastructure financing between 2008 and 2017. Of this, 63% went to upper middle-income countries (UMICs) and 35% went to lower middle-income countries (LMICs) (Figure 2).

Some countries were favoured over others: Brazil, China, Indonesia, India and Turkey, for example, all saw strong investment flows. The share of financing was slightly better for LMICs when expressed relative to GDP. When total financing for 2008 to 2016 is compared to total GDP for the same period, LMICs received 34.5% of all financing while accounting for just 22.6% of total GDP. Among LICs, however, the relative share was only marginally better, at a meagre 2.2% of all infrastructure financing for just 1.4% of total GDP (Figure 3).

Figure 2 Private finance to LICs and MICs (2008–2017): LICs have received less than 2% of total private finance over the past decade



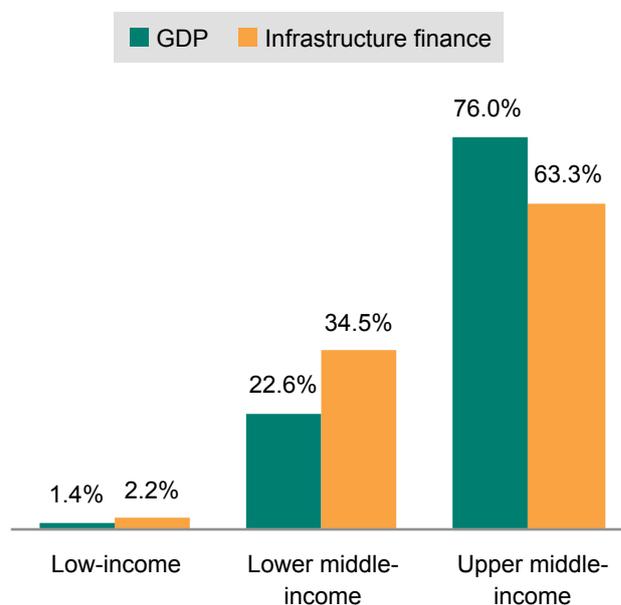
Source: World Bank Private Participation in Infrastructure Database; International Bank for Reconstruction and Development (IBRD); International Development Association (IDA); Asian Development Bank (ADB); African Development Bank (AfDB)

Private financing has also been heavily concentrated in certain sectors. Energy and information, communications and technology (ICT) received 37% and 30% of total funding flows, respectively, between 2008 and 2017 (Figure 4) (Bationo et al., 2018).

Energy has been an attractive sector for investors because of its strong returns over long periods. However, investing in the energy sector is not without difficulty, as highlighted in Box 1 on Kenya’s Turkana wind-power farm. As a result, interest has been strongest from specialised global investors with experience in the sector. More recently, these have included ‘green’ investors in hydroelectric, solar and wind energy generation.

ICT is also an attractive sector for private investors, as the hard infrastructure required is relatively capital-light, mostly involving the construction of towers, rather than the more expensive option of tunnelling. In addition, users pay for services on either an upfront or relatively short-term, periodic basis, making the collection of revenues easy and secure. The sector has been particularly vibrant in developing countries in recent years, with large commercial companies emerging, some from the regions themselves, and investment spreading to countries that would otherwise have seen minimal interest, including most LICs.

Figure 3 Private finance to LICs and MICs relative to GDP (2008–2017)



Source: World Bank Private Participation in Infrastructure Database; International Bank for Reconstruction and Development (IBRD); International Development Association (IDA); Asian Development Bank (ADB); African Development Bank (AfDB); GDP figures from World Bank Development Indicators Database

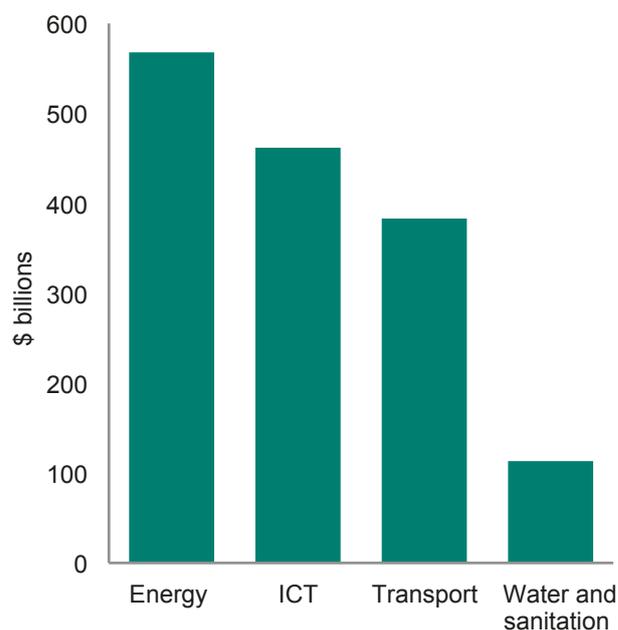
There is a lack of private finance for LICs and urban infrastructure

More generally, however, private finance has been lacking for LICs; they have attracted less than 2% of total private funding for infrastructure over the past decade (Bationo et al., 2018).

There are numerous reasons for this, including weak business fundamentals due to the countries' under-developed economies. In addition, their poor business environments and risk of macroeconomic and political instability discourages investors, especially those with a more moderate risk appetite. The situation has worsened since 2012, with private finance collapsing to negligible levels for LICs and many seeing no private-financing inflows at all over the past three years (Figure 5) (Carter and Tyson, 2015; Bationo et al., 2018).

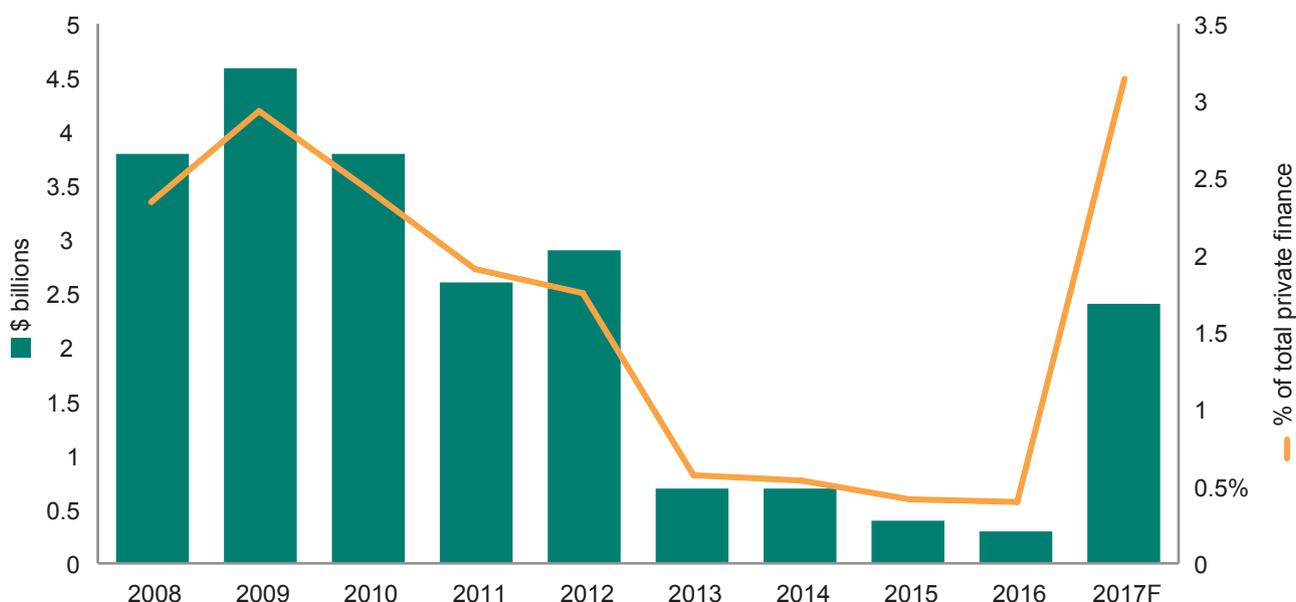
The shortage of private financing is also apparent in certain sectors. Water and sanitation, for example, an essential aspect of urban infrastructure, only received 7% of total private financing in the decade to 2017. This is a particular concern in those countries seeing rapid urbanisation, which have difficulty attracting private finance, most notably LICs. However, it is also a function of the obstacles thrown up for private investors by the sector itself, namely, the difficulties in collecting payment for services in urban environments (Bationo et al., 2018).

Figure 4 Private finance to developing countries by sector (2008–2017): energy and ICT have soaked up 67% of all private finance, transport, 25%, and water and sanitation, 7%



Source: World Bank Private Participation in Infrastructure Database; International Bank for Reconstruction and Development (IBRD); International Development Association (IDA); Asian Development Bank (ADB); African Development Bank (AfDB)

Figure 5 Private finance for LIC infrastructure (2008 – 2017): LICs have been hardest hit by the downturn



Source: World Bank Private Participation in Infrastructure Database; International Bank for Reconstruction and Development (IBRD); International Development Association (IDA); Asian Development Bank (ADB); African Development Bank (AfDB)

Private financing is pro-cyclical, leading to volatile investment flows

A further issue has been the pro-cyclicality of private finance. From 2008 to 2014, there was an upswing, with private funding to infrastructure averaging \$150 billion a year. This was driven by global investors' bullishness on emerging markets and the 'search for yield', thanks to low interest rates in developed economies, which sparked

strong flows to emerging markets and infrastructure (Tyson and McKinley, 2014; Carter and Tyson, 2015).

With interest rates on the rise in developed economies since 2014 and investor sentiment less positive on emerging markets, there has been a reduction in flows to developing economies and to the infrastructure sector, where annual private finance has halved to an average of just \$75 billion annually. This will be keenly felt because of the need for long-term investment (Tyson and McKinley, 2014; Carter and Tyson, 2015).

Box 1 The Lake Turkana Wind Power Project, Northern Kenya

Lake Turkana in northern Kenya is the site of a major wind-power project. It comprises nearly 300 wind turbines that will transmit power to the national grid. Once operational, it will increase Kenya's national electricity generation by 20% and be a cheap and renewable source of power. It is forecast to reduce the country's carbon emissions by 16 million tons during its 20-year lifespan.

The project has cost \$680 million and been financed through 25% equity, 5% mezzanine debt and 70% senior debt, with a mixture of public and private stakeholders.

The 25% equity financing (and ownership of the wind farm) has been taken on by a privately owned special-purpose vehicle, LTWP Ltd. The company's shareholders include Kenyan investors, specialist funds (KLP Norfund Investments, Aldwych International) and KP&P Africa BV, a Dutch investor and manufacturer specialising in wind farms. The EU-Africa Infrastructure Trust Fund, a European Union fund that blends development finance with grant financing, and Norfund, Norway's DFI have also taken equity stakes in the special-purpose vehicle.

The African Development Bank (AfDB) is lead arranger of the debt financing, in addition to providing subordinated debt and a senior loan of \$150 million. The European Investment Bank (EIB) has made a \$200 million loan, backed by commercial and political guarantees from the Danish Export Credit Agency, and loans have also been received from Norfund and South African private banks.

The project has been delayed, however, because the transmission lines are owned by Kenya Power and Lighting Company (KPLC), a listed company that is majority owned by the Kenyan government. KPLC have agreed to a 20-year purchase (or 'take-off') agreement. However, investors have been concerned about the creditworthiness of KPLC, which had only been resolved by a sovereign guarantee from an AfDB specialist fund that provides political-risk guarantees, the African Development Fund.

Because of the complexity of the governance and financing arrangements, as well as the difficulty of orchestrating such a large-scale project in a remote and insecure region in Kenya, the project has taken eight years to plan and three years to build. The construction phase was completed in 2017, however, at the time of writing, power transmission has still not started because of delays in building transmission lines.

Nevertheless, the Lake Turkana Wind Power Project not only illustrates the potential of co-financing for such large-scale infrastructure projects, but also the long lead-times and complex financing and government arrangements needed to bring such projects to fruition.

Source: LTWP website; AfDB website; Business Daily; The East African

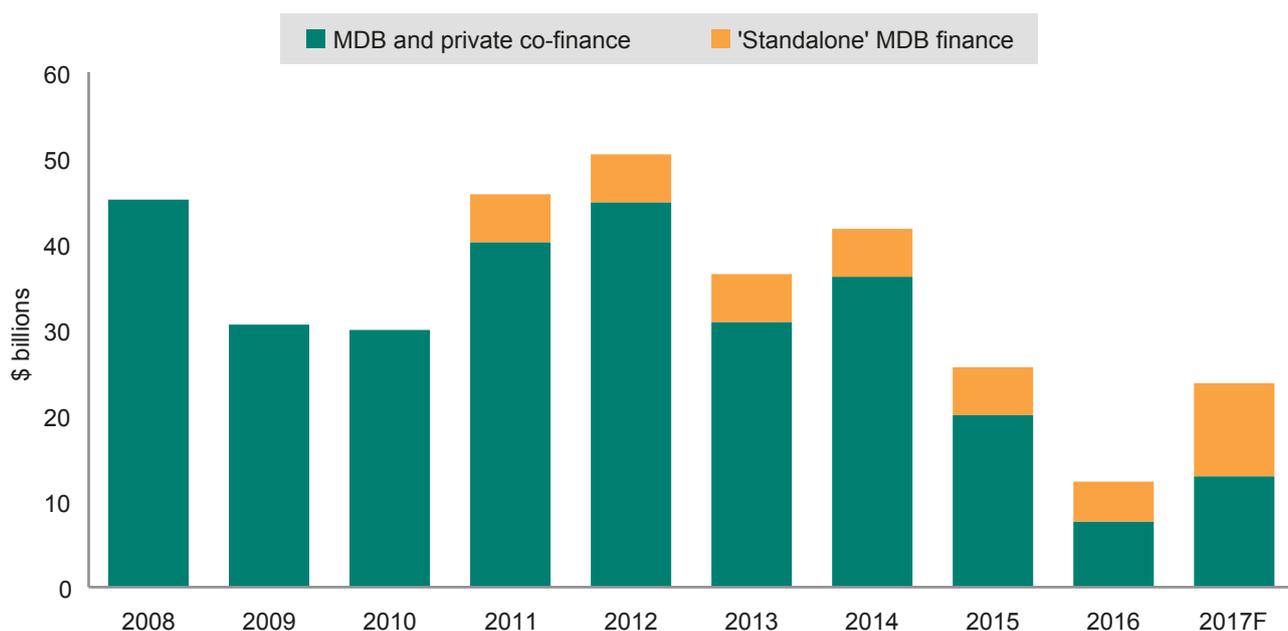
Challenge 2: IFIs have innovated but the scale of private finance remains low

IFIs have developed new, innovative policy approaches

IFIs have recognised the need to mobilise greater levels of private finance and direct it to those sectors that are less commercially attractive, but important for development. They continue to provide traditional infrastructure financing and support, both as sole lender and by offering technical support and guarantees for private investors. The latter includes specialist institutions, such as the Multilateral Investment Guarantee Agency (MIGA) and export credit agencies.

In addition, IFIs have developed innovative policies and instruments to stimulate private finance, including co-financing with the private sector (known as ‘blended finance’) to de-risk private investment. IFIs have financed early-stage projects, for example, or provided equity or subordinated debt, with private investors taking the senior debt. Such approaches have been applied to both individual projects and funds, with nearly 170 such funds being set up in the last five years (Blended Finance Taskforce, 2018).

Figure 6 IFI-supported private finance flows (2008–2017): mobilisation of private finance has been weak, especially since 2012



Source: World Bank Private Participation in Infrastructure Database; International Bank for Reconstruction and Development (IBRD); International Development Association (IDA); Asian Development Bank (ADB); African Development Bank (AfDB)

Such innovations have often been led by DFIs and the private sector windows (PSWs) of MDBs because of their private-sector mandates, their focus on ‘deal-making’ and their experience of financial structuring, as illustrated in Box 2 of the IDA’s PSW at the World Bank. They have thus achieved higher mobilisation ratios than the MDBs (Blended Finance Taskforce, 2018).

Other innovative policies have sought to tackle specific barriers to private investment. For example, private investment in the power sector has been held back by an inability to secure payment for services where electricity is free or subsidised, or where widespread jerry-rigging of power supply makes households reluctant to pay. A solution developed by the IFIs has been to include ‘off-take’ agreements in contracts to guarantee electricity sales for investors. These are often provided by the government in question or national electricity providers to the household sector. However, it should be noted that such agreements act to shift risks from investors to the body providing the agreement – usually IFIs or host governments – and this risk needs to be explicitly and carefully managed.

Such approaches have been effective in encouraging investment in the energy sector over the past decade, as we saw with the Lake Turkana Wind Farm project in Kenya in Box 1. Similar off-take agreements are currently being developed for the water and sanitation industry and it is hoped that they will encourage investment

in these crucial sectors for urban development and public health.

Another policy initiative that is seeing success is the creation of dedicated DFI-financed funds for innovative demonstration projects. This is proving effective in LICs and in fragile and conflict-affected states (FCAS), where the lack of established business models has been a significant disincentive to private investment. This approach is illustrated by CDC Group’s ‘Impact Accelerator’ in Box 7. The initiative has facilitated investment in difficult environments, such as the Democratic Republic of the Congo (DRC) and Rwanda, and is proving effective in both resolving and demonstrating solutions to barriers to private investment.

IFIs have also established quasi-private companies with specialist mandates. For example, a consortium of IFIs led by the Dutch development bank, FMO, has provided equity capital for currency-exchange fund TCX to provide FX-hedging instruments for private investors in developing economies (see Box 11 for more detail).

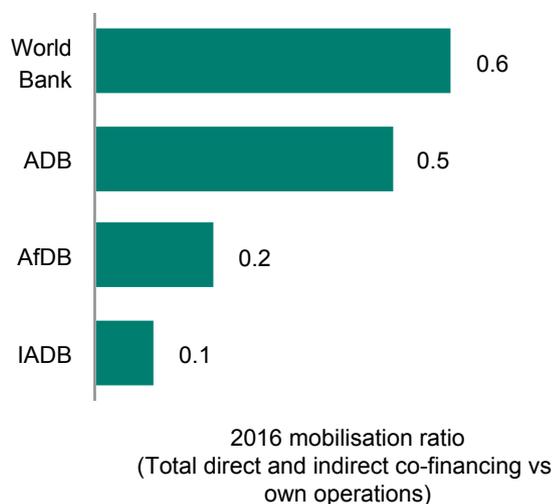
IFIs’ mobilisation of private finance is still well below what is needed

Despite these policy ‘wins’, IFI-supported private finance has not gained traction. From 2008 to 2014, it has averaged of \$37 billion annually, but then declined to an annual average of just \$13 billion between 2015 and 2017. MDB standalone financing has offset some of this decline, increasing from \$27 billion in 2015 to an estimated \$43 billion in 2017. Overall, however, the trend has been negative (Figure 6).

Consequently, mobilisation ratios – measured as total direct and indirect private financing mobilised to own operations⁵ – have been low. MDBs have averaged a mobilisation ratio of 0.7:1. PSWs at the MDBs and DFIs – which typically invest in more commercially attractive projects – have averaged a mobilisation ratio of 1.5:1. This compares with an estimated ratio required to raise adequate funds for infrastructure of between 4:1 and 6:1 (The Blended Finance Taskforce, 2018)⁶ (Figures 7 and 8).

An issue to consider is the fact that higher mobilisation ratios are likely to require higher subsidies. As the volumes of finance mobilised rise, marginal projects and investors will need to be engaged. This is likely to result in ever more risky projects and the engagement of increasingly risk-averse investors, requiring higher subsidy levels. Analysis of the justification of such subsidy is beyond the scope of this paper. However, there is a point at which the cost of the subsidy becomes so large, that more could be achieved by direct IFI investment.

Figure 7 MDB private-finance mobilisation ratio



Source: The Blended Finance Taskforce, 2018, *Better Finance, Better World*

Note: Mobilisation ratios are calculated as total direct and indirect private financing mobilised versus own operations, expressed as a ratio to \$1 of own-operation financing. The figures are for total private financing, not financing for infrastructure only.

⁵ See the Blended Finance Taskforce (2018) for a detailed discussion of the methodology.

⁶ Pro rata for the \$1.5 trillion needed, as discussed earlier.

LICs remain marginalised because of inherent risk ... and IFI mandates

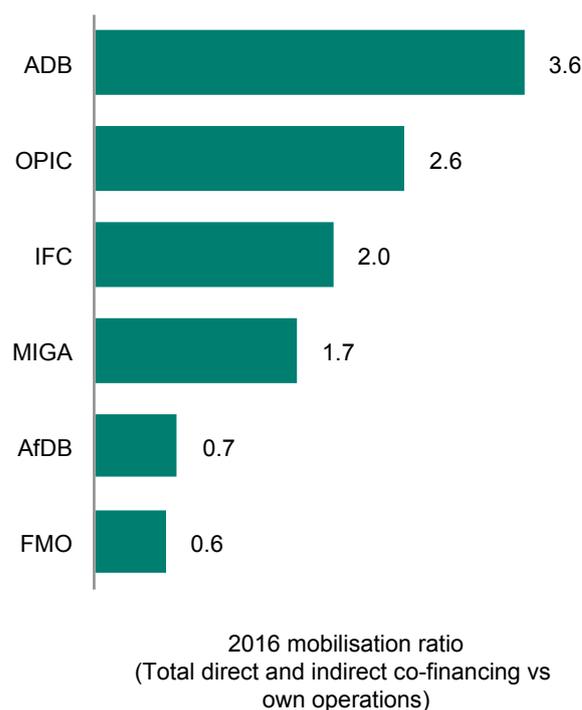
Moreover, and despite the development mandates of the IFIs, in the decade to 2017, only 6.8% of IFI-supported deals were in LICs. Further, this support was dominated by technical assistance, not actual finance. For example, between 2001 and 2016, the International Finance Corporation's (IFC) portfolio was dominated by MICs, with only 2.6% of its investments going to LICs. The Overseas Private Investment Corporation (OPIC) has also demonstrated a similar pattern of shifting away from LICs towards middle and high-income countries in recent years (Kenny et al., 2018). This has fuelled criticism that the IFIs are not providing adequate financing to LICs.

However, it is important to note that there are factors imposing natural limitations on IFIs' ability to invest in LICs: fundamental investor appetite, absorptive capacity and the fact that portfolio allocation has to be proportionate to a country's GDP. In addition, DFIs remain important investors in LICs and FCAS. What's more, statistically, some of the low level of investment in LICs is down to the fact that countries, such as Nigeria and Indonesia, have graduated from low- to middle-income status.

Still, there are policy and mandate issues unnecessarily restricting IFIs' ability to invest in LICs. For example, MDBs typically seek to maintain an AAA credit rating and achieve net profitability, curbing their risk appetite for LICs.

DFIs are usually less constricted in this regard and some – recognising that low levels of investment in LICs is an issue in relation to their development mandates – have spearheaded innovative policy to increase investment in these countries. In 2017, for instance, CDC group, the UK's DFI, refocused its investment policy on poorer and more fragile countries, while the IFC set a goal of having one third of all projects in LICs, with at least 6% of the portfolio in FCAS.

Figure 8 Private sector window and DFI private-finance mobilisation ratios



Source: *The Blended Finance Taskforce, 2018, Better Finance, Better World*

Note: Mobilisation ratios are calculated as total direct and indirect private financing mobilised versus own operations, expressed as a ratio to \$1 of own-operation financing. The figures are for total private financing, not financing for infrastructure only.

Challenge 3: The lack of ‘bankable’ projects is a key barrier

Interviews conducted over the course of our research suggest there is a lack of ‘bankable’ developing-country infrastructure projects that meet investor requirements in terms of risk, liquidity and tenure.

This could be because projects are typically in the early stages of development. This poses significant planning, governance and construction risks that are unacceptable to private investors, particularly institutional investors. In addition, planning and construction phases can be lengthy, with the average project preparation period being 5 to 10 years. Added to the construction phase, this means that a large project can take 10 to 20 years to become operational and, thus, ‘bankable’ (te Velde et al., 2015).

This issue has been made more acute by recent financial conditions. Since the global financial crisis and the introduction of Basel III, commercial banks have scaled back cross-border lending to emerging markets. Before this, the banks had been an important source of early-stage financing. This has now declined (Bationo et al., 2018).

There are also other barriers to ‘bankability’. Investors often find deals excessively complex or bespoke, with non-standard financing, governance and risk mitigation. This means that investors need specialist skills and must be prepared to spend considerable time and money to thoroughly understand each project. Greater standardisation and a broader range of products would help to address these issues.

Innovative approaches have achieved successes

IFIs have sought to develop new policy approaches to accelerate the pipeline of ‘bankable’ projects. A basic, but important, approach has been to increase early-stage financing on a standalone basis and then seek private finance when the operational stage has been reached.

New project-preparation facilities are also making a difference. Norfund, for example, has set up project-preparation facilities and co-investment funds to build up a pipeline of ‘bankable’ clean energy projects. Financing for clean energy now accounts for half of its portfolio,

while 92% of its portfolio is in LICs. We take a closer look at Norfund’s investments in Box 3.

Project-preparation facilities have also sought to partner with private finance in the development phase of projects. The Global Infrastructure Fund, for instance, discussed in Box 8, partners with a wide range of institutional investors and commercial investment banks to accelerate the pipeline of ‘bankable’ projects (te Velde et al., 2015).

IFIs have also offered technical assistance in developing countries, enabling the countries to take on responsibility for planning, executing and operating infrastructure. This is significant: if such capabilities can be established in situ, the countries themselves can speed up the development of infrastructure because they will not be reliant upon the relatively limited resources of the IFIs.

Box 2 The IDA’s private sector window

One recent policy initiative was the 2017 replenishment of the private sector window at the International Development Association (IDA), the World Bank’s fund for the poorest 75 countries.

The \$2.5 billion commitment aims to support private investment in LICs. In addition to convention technical assistance, the PSW offers project-level de-risking for private investment, including the provision of project preparation facilities, blended finance, risk-mitigation instruments and local-currency instruments, as well as liquidity support for take-off agreements and local-currency instruments.

Still, the PSW continues to tackle barriers to private investment at the project, rather than the sectoral level. While there are components that are likely to contribute to market development – for example, the issuance of local-currency instruments should aid the development of domestic capital markets – this is not the PSW’s core focus.

Source: World Bank Group

Some IFI programmes have been criticised for being superficial and not delivering the depth of technical and legal expertise needed. However, the reality may be that building up such expertise short term is simply not realistic. Many projects may need to continue to draw on specialist firms and institutions, such as global construction companies and IFI infrastructure departments, for the technical and practical experience needed for complex and large-scale projects.

'Micro-infrastructure' has brought about rapid delivery and private investment

Clean-energy 'micro-infrastructure' projects – typically small-scale hydroelectric, wind or solar power plants – are one area where there has been distinct progress. The sector's relatively low financial and technical barriers to entry have spurred this uptrend – not least the far less complex governance involved (often a simple private contract) and the need for more limited financing.

They have been popular with socially responsible investors because they rapidly bring welfare benefits to households and small firms. Customers receive services within weeks or months, in contrast to the year-long waits associated with large-scale electricity generation plants and transport transmission networks.

While the long-term contribution of such micro-infrastructure projects is questionable, given the need for very large-scale generation, they offer investors a speedy, 'bankable' alternative. Consequently, they are of interest to investors, particularly those concerned about social as well as financial returns.

Still, the IFI pipeline remains too small and too slow

Despite these innovations, IFIs and private investors agree that it is the lack of projects, not a lack of finance, that is the main barrier to greater private investment. The shortage is also leading to concerns that private investors are being crowded out by IFIs as they compete for available deals. This only underscores the pressing need to develop a pipeline of bankable projects at greater scale and speed.

Overall, the shortage of bankable projects is seen as one of the key bottlenecks in scaling up private finance for infrastructure in developing countries.

Box 3 Norfund and CDC Group's investment in Globeleq Africa

Globeleq Africa is a company that owns, operates and develops independent green power projects in Africa. The company is headquartered in London and has operations in South Africa, Tanzania, Kenya, Cote d'Ivoire and Cameroon, with investments in a broad range of green energy projects, including natural gas, solar and wind. Norfund and CDC Group took equity stakes of 30% and 70%, respectively, in the company in 2014. It provides early-stage financing and technical assistance for project development with a view to bringing projects to maturity more rapidly.

Source: www.globeleq.com

Challenge 4: Political and macroeconomic risk is a deterrent for investment

For investors, the key risks of infrastructure investment in developing economies are political and macroeconomic, from fluctuations in the exchange rate and interest rates to a wide variety of political and regulatory uncertainties (Figure 9).

Managing political and macroeconomic risk poses significant challenges. The risks are difficult to hedge, as many emerging markets lack liquid markets in suitable hedging instruments. Even where such markets exist, hedging is expensive and the instruments are limited (African Private Equity and Venture Capital Association (AVCA), 2017; World Economic Forum (WEF), 2016).

This is a significant deterrent for investors, especially institutional ones. For example, in a survey of investors conducted by AVCA and WEF, 32% of private-equity investors and 65% of institutional investors said that their typical macroeconomic and political risk-avoidance strategy would be not to invest at all (AVCA, 2017; WEF, 2016).

The AVCA/WEF survey further found that even among high-risk private-equity investors, 55% managed risk by restricting investments to those with inherent hedges. Investors prefer small-scale renewable opportunities, such as rooftop solar panels and wind farms, for example, which are less politicised, or companies with high levels of exports, which are less exposed to domestic currency risk. However, while this approach has boosted investment in such projects, it also means that investors' willingness to invest in large-scale, public projects has been constrained (Figure 10) (AVCA, 2017; WEF, 2016).

IFIs play an important role in managing 'soft' political risk

Investors also rely on IFIs to manage political and economic risk. They see IFI involvement in a project as a 'signal' of risk mitigation. They know that IFIs will use their established relationships with governments and other quasi-public bodies should there be difficulties with

a project's governance, legal or regulatory framework (te Velde et al., 2015).

Most notably, the IFIs have played an instrumental role in facilitating large-scale and regional projects, where establishing good governance models in complex and difficult environments is crucial and difficult for private investors to manage alone. An example of such IFI involvement is illustrated in Box 4, which relates to regional electricity generation and trading in Asia (te Velde et al., 2015).

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IFI risk-mitigation instruments are too costly, burdensome and inflexible

However, investors have been loath to manage political risk through IFI insurance. Indeed, such risk insurance was cited as the least popular risk-management strategy in the above-mentioned survey, with only 27% of institutional investors and 10% of private-equity investors saying they used it (AVCA, 2017; WEF, 2016).

Interviewees attributed this low uptake to the IFI instruments being too expensive and complex. Investors

said the process to access them was burdensome and that the instruments lacked flexibility and compatibility with the risks and projects they were considering (Figure 11).

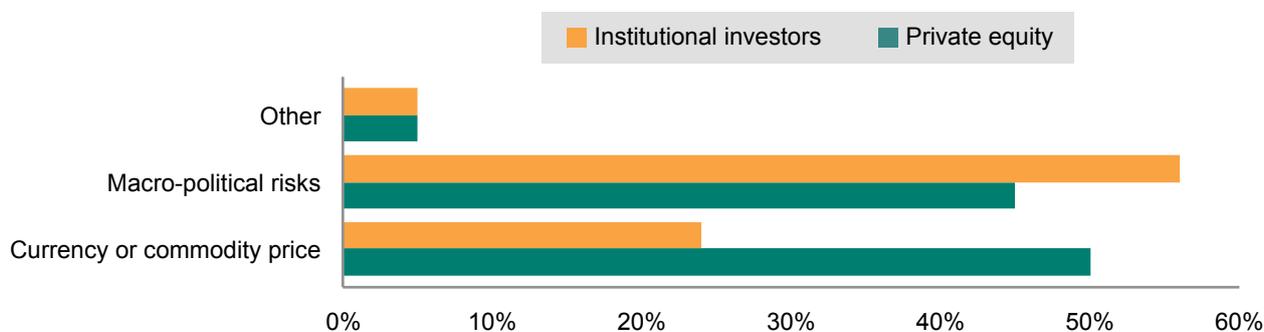
Where interviewees did take out political-risk insurance, they claimed that the process for making claims was difficult and that the number of successful claims was unreasonably low. MIGA, for example, has reportedly paid out on only seven claims in the past decade (although MIGA says that this also reflects careful underwriting and claims assessment) (WEF, 2016) (Figure 11).

The poor uptake is evident in the IFIs' portfolios. Although they offer a wide variety of instruments, including financial guarantees, insurance and credit-enhancement schemes, risk-mitigation instruments account for just 4.5% of financing operations (WEF, 2016).

Innovation in FX hedging has been successful, but is not at adequate scale

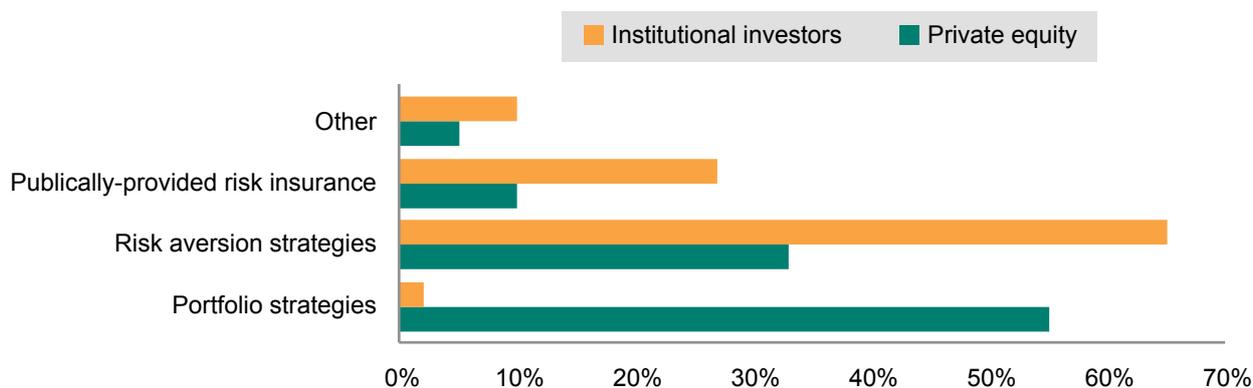
One area where there has been significant policy progress is in FX hedging. The most successful model has been TCX, seed-funded by the FMO, the Dutch development agency, in conjunction with other DFIs, microfinance investment vehicles (MIVs) and international donors (now also with the involvement of the German and Dutch governments), with a mandate to provide FX-hedging instruments in illiquid emerging-market currencies. Although there has been some criticism of the cost involved and the limited range and tenure of the hedging instruments offered, TCX has seen significant uptake of its products by private investors. We discuss TCX further in Section 4, Box 11.

Figure 9 Identifying the key risks for infrastructure investors: political and macroeconomic risks are the most important for investors (percentage of respondents)



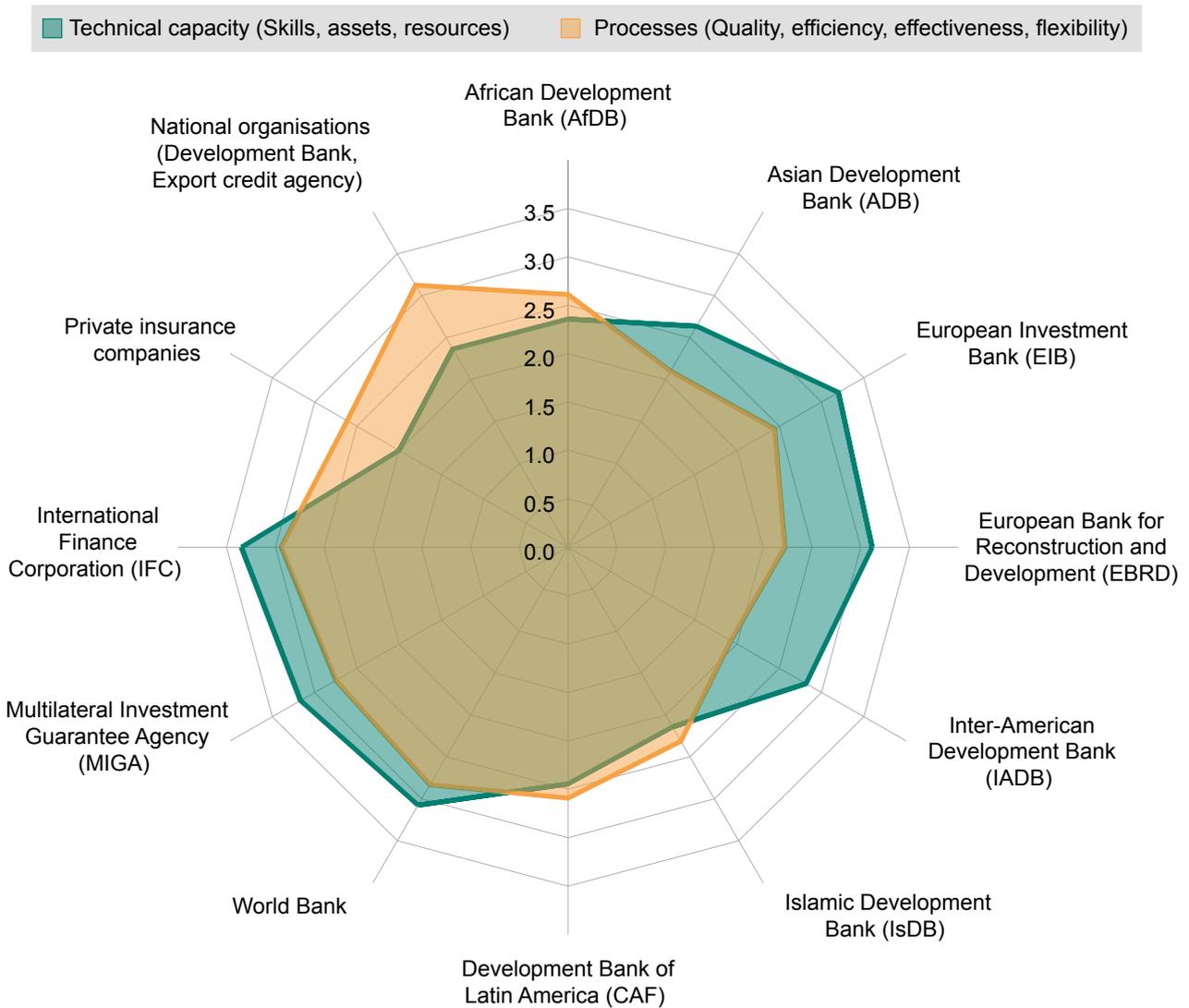
Source: World Economic Forum, 2016, *Risk Mitigation in Infrastructure: Gap Assessment*; African Private Equity and Venture Capital Association (AVCA), 2017

Figure 10 How best to manage political and macroeconomic risk? The most common risk-avoidance strategic is not to invest (percentage of respondents)



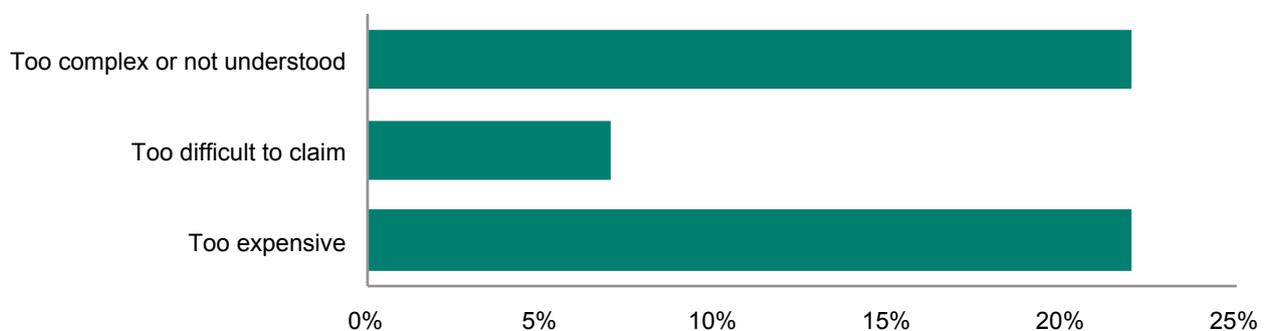
Source: World Economic Forum, 2016, *Risk Mitigation Instruments in Infrastructure: Gap Assessment*; African Private Equity and Venture Capital Association (AVCA), 2017

Figure 11 Big gaps in IFI risk-mitigation instruments from an investor perspective



Source: World Economic Forum, 2016, Risk Mitigation Instruments in Infrastructure: Gap Assessment

Figure 12 Investors unimpressed by the promise of political-risk insurance: publicly provided political-risk insurance is too complex and too expensive (% of respondents)



Source: African Private Equity and Venture Capital Association (AVCA), 2017

Challenge 5: Products are not meeting institutional investor needs

Institutional investors have the potential to be key investors in developing-country infrastructure, as the sector's assets offer stable and relatively low-risk revenues.

There has been some investment by institutional investors in infrastructure in developing economies. For example, Eastspring Investments, the Asian asset-management business of Prudential plc, Allianz and AXA (all major European insurance companies), has invested in the IFC's Managed Co-Lending Portfolio Program (MCPPI), which we discuss in Box 10. Norwegian, German and Danish pension funds have also invested in the sector.

Overall, however, institutional investors have been somewhat reticent, primarily because of a mismatch between their needs and the products offered by the IFIs.

Institutional investors have specific regulatory and fiduciary requirements

Institutional investors have fiduciary responsibilities and are subject to regulatory requirements. These restrict investments to assets that meet minimum credit-rating and liquidity levels, thresholds often not met by IFI product offerings. Such restrictions vary by jurisdiction, but can constrain or hinder investment in infrastructure.

Globally, Solvency II has created limited appetite for infrastructure investment by insurance companies. This is because it requires high capital buffers for long-term assets – a typical characteristic of infrastructure investments – and for higher-risk assets. Both increase the capital that needs to be held for infrastructure assets. While it is possible to reduce this capital in certain instances, many exemptions do not apply to typical infrastructure assets. For example, the relief can be claimed on fixed cash flows, but these are uncommon in infrastructure assets, especially in the early stages of development.

These restrictions arise predominantly from international regulations. However, domestic or regional

regulatory frameworks can impose further restrictions on local pension funds and insurance companies.

In the EU, regulations also constrain insurance companies from outsourcing investment decisions and portfolio management to unregulated entities. This makes it difficult for European insurance companies to participate in transactions that are unregulated, including DFIs and the special-purpose vehicles used for project financing (Blended Finance Taskforce, 2018).

Similarly, national regulations can limit investment in domestic infrastructure. Some countries, such as Vietnam and Thailand, for example, simply prohibit lending to infrastructure projects. Other restrictions affect specific parts of the infrastructure investment cycle (typically early-stage financing), such as limits on unlisted equity (Thailand, for instance) or upper limits on percentage shareholdings (Singapore, for example, where holdings are capped at 10%). These issues are particularly important, as domestic pension funds and insurance funds are growing rapidly in many developing countries and could be an important source of funding for infrastructure. Further country-specific examples are discussed in more detail in Box 5.

Reforming regulatory frameworks to facilitate infrastructure investment while simultaneously maintaining appropriate fiduciary standards can help to address this issue. Box 6 presents an example of where this has been done successfully, in Columbia. More needs to be done in this regard, however.

Investments offered by IFIs have only partly met these requirements

IFIs have sought to meet the requirements of institutional investors. Their most common approach has been to tranche financing into equity, subordinated debt and senior debt within dedicated funds. Institutional investors are then offered the lower-risk senior debt, which comes with a formal credit rating.

Such structuring is positive, but more product innovation is needed. There are two main aspects to this. First, international and domestic regulatory authorities should be challenged to facilitate greater levels of investment in infrastructure in developing economies without compromising fiduciary and regulatory standards.

Second, the paucity of liquid assets needs to be tackled. The infrastructure assets being offered by the IFIs are untradeable; they typically lack transferability clauses, for example, or take the form of assets not traded on the secondary markets. This makes the assets, regardless of credit risk, unsuitable for many institutional investors (Humphrey, 2018).

Box 4 The role of IFIs in managing political risk in regional electricity networks in South Asia

The South Asian region suffers from significant electricity shortages; improvements in supply would accelerate its economic development. The area also has great potential for electricity trading: the Himalayan region presents an excellent environment for hydroelectric power generation close to countries – and potential importers – with energy deficits and a high population density, such as India, Pakistan and Bangladesh.

Realising this potential has been complex and difficult. The first hurdle has been to construct large-scale, highly complex electricity generation and transmission networks in a very geographically challenging area. The second has been to establish governance frameworks appropriate to both electricity importers and exporters, which are fit for purpose in the region's tense political environment, which it spans a number of LICs and FCAS. Often, the greatest disagreements have been between those countries with the greatest potential for electricity trading.

IFIs have played a pivotal role in turning the region's potential into reality. First, from the perspective of private investors, the involvement of IFIs has been instrumental in building confidence in the project and serving as a mechanism for mitigating political risk.

Second, IFIs have spearheaded the establishment and management of credible governance structures for electricity trading. The Asian Development Bank, for example, led the establishment of the South Asia Association for Regional Cooperation (SAARC) in 1985. Member states include Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka. SAARC includes a forum for managing the governance of regional electricity trading on a permanent basis. It has orchestrated the successful conclusion of regional agreements and the resolution of disputes by leading what were often cumbersome and lengthy negotiations in this difficult political-economic environment.

Similarly, IFIs have been at the forefront of setting up regional governance structures, which have been instrumental in getting numerous individual projects off the ground. One such example is the CASA 1000 Electricity Transmission and Trade Project for Central and South Asia, which generates and trades electricity from clean hydroelectric resources in Central Asia (Tajikistan and the Kyrgyz Republic) to South Asia (Afghanistan and Pakistan). The hard infrastructure put in place includes hydroelectric generation plants and regional transmission networks. The cost has been \$1.2 billion, spread over four countries. It is governed by an inter-governmental council and has been supported by the World Bank, USAID, the UK's Department for International Development (DFID), Australia's AusAid and others.

Governance frameworks led by IFIs have been key to attracting private finance to these projects and the sector more generally. Such projects have boosted economic growth in both the importing and exporting countries and have, arguably, helped to improve political stability in the region.

Source: te Velde et al., 2015

Box 5 Examples of Asian regulatory requirements that adversely affect insurance-company infrastructure investment

- **Philippines:** Insurers can only invest in the equities of other financial institutions with prior approval.
- **Thailand:** Insurance companies are not allowed to lend directly to infrastructure projects and investment in unlisted equity and subordinated debt is limited to 5% of total investment assets.
- **Indonesia:** Insurers must hold at least 30% (non-life: 20%) of their portfolio in government bonds.
- **Malaysia:** Insurance funds are subject to an investment cap of 5% of total assets on shares not listed on the main market.
- **Vietnam:** Insurance companies are not allowed to invest directly in infrastructure projects.
- **Singapore/Hong Kong:** There are limits on the equity that life-insurance companies can hold in infrastructure companies, unless they are investing in infrastructure through a special vehicle set up for that purpose.

Source: Interview material

Box 6 Regulatory reform to allow financing by domestic pension funds in Colombia

Colombia's Financiera de Desarrollo Nacional (FDN) is a financial development institution mandated to catalyse private investment in domestic infrastructure. It was structured with the national regulatory environment in mind, with seed capital provided through equity investments from the IFC and the Development Bank of Latin America. Thus, FDN is not subject to regulations governing state institutions. Its task is being complemented by a reform of domestic pension-fund regulations to lift restrictions on investment in infrastructure.

These regulatory changes have allowed FDN to coordinate the financing of major national infrastructure projects, including \$300 million in upgrading national roads, bridges and tunnels. The funding has come from FDN subordinated finance, as well as the issuance of domestic syndicated loans and bonds. Some 41% of the latter has come from domestic pension funds, 59% from international institutions.

Source: Blended Finance Taskforce, 2018; Humphrey, 2018

Solution 1: Re-orientate IFIs' mandates on their unique value-added roles

IFIs must broaden their key roles in early-stage projects and managing political risk

IFIs have unique and highly valuable expertise in project development, helping to establish strong governance frameworks and manage political risk.

They are also able to use their own risk capital to finance projects in the early stages, when private financing can be most difficult to secure. IFIs are also adept at helping countries to 'get the basics right' when it comes to creating an attractive investment environment, building capacity with national governments and offering 'comfort' to private investors via the 'soft management' of political risk.

Continued – and, indeed, greater – IFI focus on these key areas is essential to building a stronger and swifter pipeline of 'bankable' projects.

IFIs need to re-orientate their mandates to 'originate to distribute'

The IFIs also need to deliver greater financial additionality, however, and their current mandates are throwing up barriers. These include IFIs' volume-driven lending targets, which are leading to competition with, rather than the attraction of, private finance. Performance targets based on private-finance mobilisation and project realisation would be more valuable.

In addition, IFIs typically hold infrastructure financing to maturity, with an estimated \$60 billion of such assets currently on their books. This means there is a lot of money tied up that could be used elsewhere.

As mentioned, most of the IFIs' financing additionality comes in the early stages of a project, when private financing is difficult to obtain. Their additionality is low during the operational phase, when the pool of potential investors is much bigger.

Consequently, a more radical re-orientation of the IFI business model is needed, with a shift from the current 'originate and hold' mentality to 'originate to distribute'. This would optimise financial additionality over the project cycle, with the added advantage of recycling IFI capital, lifting constraints on new lending and relieving the need for capital replenishment.

Such an adjustment in the IFI business model could also be a source of assets for a 'mega-fund' (discussed in the next section), to which IFI assets could be sold, providing it with an immediate pool of assets (Figure 13).

On the flip side, the revised model would have the disadvantage of concentrating IFI portfolios in higher-risk, early-stage financing – a potential threat to the IFIs' AAA credit ratings. This dilemma could be resolved by expanding the flow of early-stage financing through DFIs, PSWs or separately capitalised entities with dedicated mandates in this area.

There needs to be greater emphasis on financial additionality

IFIs' mission is to support development, but, as noted earlier, financing for LICs is a relatively minor part of their portfolios, despite LICs' far greater difficulty in attracting private finance.

Consequently, a tailored, targeted policy is needed. LICs require greater standalone financing and funding over the course of project lifecycles (the traditional lending model of MDBs) until they can graduate to middle-income status.

In addition, DFI incubator funds should be extended to facilitate demonstration projects and 'innovation labs' to develop business models that are viable in LICs. This could include seed financing for third-party companies and private-equity funds, as in CDC Group's 'Impact Accelerator' (Box 7).

New mandate would lower risk-adjusted returns for the IFIs

One implication to be considered in relation to these recommendations is that they would result in lower risk-adjusted returns for the IFIs, particularly if they were implemented at scale and with a focus on LMICs and LICs. This would be a significant change, as IFIs diversify among risk categories, with the lower-risk activities effectively subsidising the higher-risk ones. This enables them to generate acceptable risk-adjusted returns across their portfolios. Anticipating any such effect of a change in mandate needs to be considered in detail and viewed as an acceptable consequence of revised IFI mandates.

IFIs have an important role in driving product standardisation

As noted in the previous section, a key issue for investors has been the lack of standardisation of products. This adds to the complexity and costs of investing in the sector and reduces the investment appetite of investors who require liquidity.

IFIs and private investors need to partner to deliver greater standardisation at both the instrument and market level. For example, at the instrument level, ‘master agreements’ could be used to set standard terms

that are then automatically adopted for subsequent transactions, which then require only short-form confirmation. Such master agreements could tackle specific barriers, such as transferability clauses and counterparty credit management.

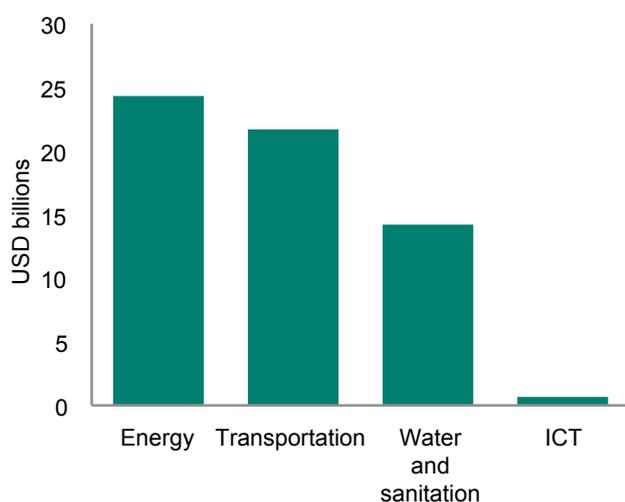
At the market level, standard market practices need to be established. Such standardisation has been important in deepening markets in other products, such as real-estate investment trusts (REITs), green bonds, credit derivatives and asset-backed securities.

Standardisation and market development tend to be encouraged by the availability of data on asset-class performance. Such data allows investors to make more informed decisions on risk and facilitate other important aspects of market deepening, such as index development.

Currently, there is limited data available on infrastructure assets. The IFIs hold such information in relation to their portfolios, however. Establishing a mechanism for making their data publicly available would spur the development of an investor base for infrastructure. This issue is also particularly important for LICs, because the IFIs are among the few investors with a track record of investing in them, making their data particularly valuable to private investors.

There is a strong case for IFIs to take the lead role in coordinating and supporting the development of market standardisation as part of policy initiatives to mobilise the co-financing of infrastructure.

Figure 13 IFI on-balance-sheet infrastructure assets by sector (2016)



Source: Author calculations based on data from World Bank, African Development Bank AfDB and Asian Development Bank ADB annual reports

Box 7 CDC ‘Impact Accelerator’ fund

One of the key barriers to investment in LICs is the lack of established and profitable models for private investors. Recognising this, a number of IFIs have established facilities with a mandate to experiment in innovative investment models.

CDC Group, the UK’s DFI, has established an ‘Impact Accelerator’ fund to tackle the issue. It invests in environments that tend to be difficult for private investors, most notably LICs and FCAS. Its mandate is to invest capital in businesses with commercial and developmental impact, which can be sustainable in the medium term, and to achieve a flat return on its overall portfolio.

Its investments in infrastructure have included a \$9 million hydroelectric project in the DRC, a country that has suffered from decades of conflict and has a 3% electrification rate. As well as the demonstration effects of such a project in a difficult investment environment, there are also demonstrative benefits to economic growth from the provision of reliable and relatively cheap electricity.

Source: www.cdgroup.com

Solution 2: Use international best practices to deliver bankable projects

As discussed, a key barrier to scaling up private finance is the lack of ‘bankable’ projects. One solution to this would be for IFIs to increase their existing and successful project preparation facilities.

The problem is not simply one of scale, however. It is also one of process. Infrastructure development at the national level requires myriad capabilities, from long-term national strategies, to assessing and prioritising projects based on that strategy, then executing the construction and financing phases.

Many UMICs – such as China and Brazil – have developed strong capabilities in this regard and take the lead when it comes to planning and executing their national infrastructure strategy.

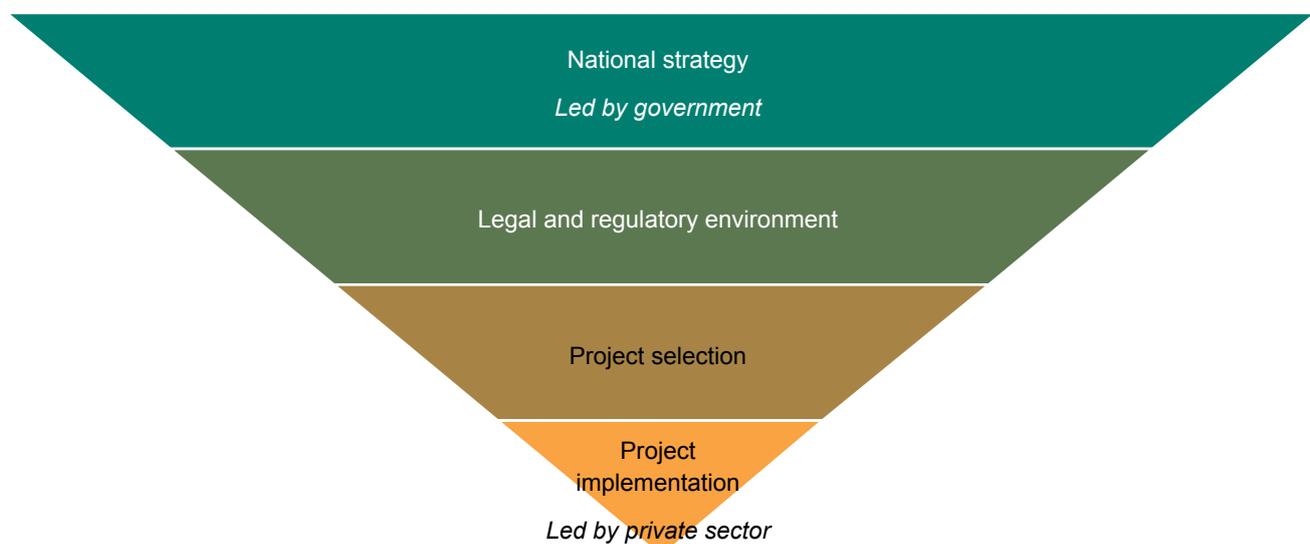
However, establishing infrastructure planning and execution capabilities is more difficult when there are institutional weaknesses, as in the case of many

LICs, including in the political, legislative and business environments. Difficulties are often encountered in the procurement process, for example – a common area of corruption – or contract enforcement.

Establishing national infrastructure plans can also be challenging because of the issues involved in coordinating the various components of execution. For example, in Africa, although more than 30 countries have passed legislation to provide for public-private partnerships, few PPPs have been enacted because of a lack of expertise on the part of the contracting authorities, a lack of knowledge as to best practices and weak intergovernmental cooperation (Vallée, 2018).

The persistence of these barriers suggests the quality of technical assistance and project preparation needs to improve. Only just over half of investors surveyed by the G20, for example, felt that IFI project preparation

Figure 14 The best-practice ‘planning pyramid’ for national infrastructure



Source: HM Treasury (unpublished)

facilities had added value (EDHEC Infrastructure Institute and Global Infrastructure Hub, 2017).

More sharing and implementation of international best practices could help. This paper highlights three areas for consideration based on G20 and HM Treasury discussions.⁷ We will now explore each of these areas in more depth.

National infrastructure strategies

Best practices for national infrastructure development involve close links to and coordination between high-level national strategies, legislative and regulatory developments, project selection and project execution. This is illustrated in Figure 14.

The ideal scenario is for a government to lead development of a national strategy in step with a coordinated legislative and regulatory framework.

This high-level strategy then needs to be translated into project selection, based on criteria that tie in with the national strategy and frameworks, including economic and financial viability.

This stage involves coordination with private sector incentives before projects get to the development and execution phases, which are typically led by private construction firms and financial institutions.

Providing technical assistance to develop strategies that marry up with project execution would be helpful, particularly for LICs and FCAS, where institutional capacity is weakest, as would innovative thinking on the

nature of technical assistance. For example, rather than using consultants, development budgets could be used to second experienced civil servants from countries where such processes have already been carried out.

Facilitating engagement between private financiers and governments

The financing of infrastructure projects is specialised and complex, and many developing countries may have limited knowledge of the spectrum of private-finance options and institutional assistance available.

IFI technical support includes training for governments in this regard and there are significant online resources available to governments seeking finance. This technical advice could be extended, however, to provide financial and construction advisers to represent and counsel national governments more closely throughout the process and in a more practical way. There could, for example, be a ‘matchmaking’ process to help LICs find the best institution to finance their projects and lend them support and advice over the project cycle. Again, this is of greatest importance to LICs and FCAS.

An example of how this could be done is the Global Infrastructure Facility (GIF) and the New Partnership for Africa’s Development Infrastructure Project Preparation Facility (NEPAD-IPPF) discussed in Boxes 8 and 9. Widening these successful initiatives could accelerate project preparation.

Box 8 The Global Infrastructure Facility (GIF)

The GIF is a project preparation facility led by the World Bank, established in 2015. Its goal is to increase the number of ‘bankable’ infrastructure projects, with a focus on complex projects with strong potential for private sector financing.

Two factors differentiate the GIF from other facilities. First, the GIF combines technical project-preparation support with significant financial support. Its flexible financing is designed to crowd-in private financing, including the direct financing of early-stage development, and to provide risk mitigation in the form of credit enhancement and subordinated risk instruments, among other things.

Second – and what really sets it apart – is the fact that the GIF is a consortium of major public and private institutional partners, with considerable engagement by private institutions. These include 12 commercial banks, a number of whom specialise in emerging markets, and 20 institutional investors, including Eastspring Investments, AIG Investment, Blackrock, Metlife and other major global asset managers, pension funds and insurers, as well national pension funds and sovereign wealth funds. Collectively, they have more than \$12 trillion in assets under management and act both as investors in GIF projects and as advisers to the consortium.

To date, GIF has approved 19 infrastructure projects, which it hopes will mobilise up to \$19 billion of private infrastructure financing. At the time of writing, the GIF has not published any data on project outcomes. This means the business model, while innovative, remains unproven.

Source: www.globalinfrafacility.org

⁷ Based on G20 and HM Treasury presentations held in London on 21 February 2017.

Using cross-border digital project preparation

A recent advance in the construction industry is digital project preparation (DPP), where the construction and planning of projects is carried out digitally, including scenario analysis and project costing. This has resulted in significant time and cost savings in those economies that have adopted it.

Implementing digital project preparation could offer significant cost and time savings for developing countries

and prove very effective in those environments. It would allow governments to engage with cross-border construction firms and facilitate international planning in an efficient and effective way. NEPAD-IPPF again illustrates how effective digital project preparation can be in developing countries (see Box 9).

Consideration should be given to implementing digital project preparation more broadly, potentially through the IFIs, and to providing governments with financing to train and invest in the human and technological expertise needed.

Box 9 The New Partnership for Africa's Development Infrastructure Project Preparation Facility (NEPAD-IPPF)

NEPAD-IPPF is a consortium led by the AfDB in partnership with financial donors and the major international construction firms, Mott MacDonald and Sofreco, who act as technical advisors. The consortium works to identify and prioritise regional infrastructure projects in Africa in the energy, transport, ICT and transboundary water sectors.

The facility has been particularly effective, because it consolidates the broad spectrum of skills needed to execute the complete cycle of infrastructure development, from national- to project-level planning, construction and operation, including national economic strategy, coordination on governance frameworks, financial advice and construction expertise.

In 10 years, it has completed nearly 40 projects, with an investment of more than \$6 billion. Projects supported include the rehabilitation and upgrade of the north-south corridor linking South Africa, Botswana, Zimbabwe, Malawi, Zambia, the DRC and Tanzania, a 1500MW hydroelectric power plant in Mozambique, and improved access from landlocked countries to sea ports. All of these projects have given significant boosts to economic growth in their regions.

Mott Macdonald has also been a leading developer of digital project preparation and has transferred its skills and knowledge from advanced economies to developing countries through the facility, underscoring the cost and time savings DPP can bring.

Source: NEPAD-IPPF website; interview material

Solution 3: Syndicate and securitise to meet investor needs

There is a mismatch between the products being offered by IFIs and those required by investors, especially institutional investors. If private finance is to be mobilised from these investors on a greater scale, the financial instruments being offered must more closely match their needs, be it for risk diversification or liquidity (or tradability), or standardised instruments. All of these things could be achieved by securitised and syndicated instruments.

Bridging the intermediation gap – syndication and securitisation

The intermediation gap could be bridged by pooling projects into diversified funds and allowing tailored instruments to be structured with reference to the diversified pool. This type of intermediation and restructuring is already common in loan syndication and securitisation.

Both loan syndication and securitisation allow for ‘tranching’ securities to be created with different levels of credit risk, from higher-risk ‘first-tier’ losses to lower-risk subordinated debt. Investments can thus be tailored to the appetites of investors across the spectrum.

While, on paper, securitised loans and instruments do not offer as much liquidity as bonds, at their current stage of development they are probably similar to infrastructure bonds in liquidity terms.

To see how these techniques could be applied to developing countries, it is worth examining the factors behind the successful development of this market: sourcing sufficient and suitable assets, sophisticated risk management and financial structuring, and distribution to a deep investor base. If infrastructure is to be syndicated and securitised, these factors need to be present or established.

MDBs can offer sufficient and suitable assets. As mentioned, they play a key role in originating them thanks to their expertise in planning and development.

World Bank, AfDB and Asian Development Bank data suggest they hold more than a \$60 billion of infrastructure assets, 90% of them on a ‘hold-to-maturity’ basis, which could be syndicated or securitised.

More broadly, many private sector participants in the infrastructure sector would also benefit from being able to syndicate or securitise assets. One example would be commercial banks, including those engaged in early-stage financing, and construction and operating firms. A developed market for infrastructure to be securitised or syndicated would enable such players to more rapidly recycle capital and accelerate the pipeline of bankable projects, as discussed earlier in this paper.

Managing risks associated with securitisation

One issue to consider when it comes to securitisation and syndication is the management of issues surrounding securitised assets stemming from the financial crisis of 2007 and 2008. Such products were deemed to be a contributing factor to the crisis. The detail is important here, however. The securitisation of products, in and of itself, did not cause the crisis. Rather, the issues were the lack of ownership in managing the underlying credit, the lack of transparency in relation to the ultimate ownership of the securities and the inadequate valuation of first-tier losses, especially as the crisis deepened (Lepper et al., 2016).

Management of these risks needs to be a key part of any securitisation programme. This includes originators retaining ‘skin in the game’, that is to say, an element of risk in the event of losses on securitised assets. For example, IFIs or commercial banks need to assess the appropriate level and valuation of first-tier losses they may acquire. They also need to assess funds carefully to ensure there are clear responsibilities for the management of underlying projects and transparency in relation to the ownership of securitised and syndicated assets.

Engaging with private financial institutions

MDBs have less-established expertise in the intermediation of such assets into syndicated and securitised products. Getting such expertise would involve hiring suitably skilled staff and building the specialist support needed to execute transactions, such as technology platforms for risk management and internal control environments to structure, value and support special-purpose vehicles.

The DFIs could be tasked with building such capabilities; indeed, some have already done so. The IFC, for instance, has highly regarded capabilities in financial restructuring. Its MCPP demonstrates the potential for DFIs to lead the way in developing suitable investment vehicles for infrastructure in close partnership with private financiers. We examine this topic further in Box 10.

However, such capabilities also require scale, suggesting that any such development is only feasible for larger DFIs or smaller DFIs acting in concert.

An alternative would be to engage private financial institutions to a much greater extent to leverage their already established businesses. This could be particularly valuable in terms of financial structuring and distribution. Its potential can already be seen in the funds run by private financial institutions, three examples being Deutsche Bank's blended funds (which include healthcare, trade and agriculture), UBS's Loans for Growth fund and BNP Paribas' green bond fund.

Although there would have to be careful consideration of the value at which assets were transferred, to avoid any potential 'subsidisation', deeper engagement with private institutions would offer the potential to mobilise private finance into the sector far more quickly than the building of in-house expertise by IFIs.

Box 10 IFC's Managed Co-Lending Portfolio Program for Infrastructure (MCPP)

The IFC's MCPP for Infrastructure ('MCPP Infra') is an infrastructure debt-syndication programme, which intermediates by buying loans originated by the IFC, pooling them in a 'loan fund', then structuring them into two types of security – a higher-risk 'first-loss' tranche, which is retained by the IFC, and a less risky 'second-loss' tranche suitable for institutional investors. The fund is backed by guarantees from the Swedish International Development Cooperation Agency to enhance its credit risk.

MCPP Infra has attracted committed capital of \$2 billion from institutional investors, including Eastspring Investments, the Asian asset management business of Prudential plc, and other major global insurers. The fund has a target size of \$5 billion.

The fund's key advantages are that the IFC can offer both scale of originated loans and sophisticated financial structuring and risk management, thus bridging the intermediation gap. This offers significant diversification benefits for investors, and the guarantees and tranching of the portfolio de-risk the investments for institutional investors to a level at which they meet fiduciary and regulatory requirements.

The programme acts as a blueprint for similar funds to be developed by capable IFIs and private financial institutions with a view to syndicating debt and securitising assets to mobilise private finance for the sector.

Source: Interview material; IFC; Eastspring

Solution 4: Deliver ‘fit-for-purpose’ hedging for private investors

As we discussed earlier, investors⁸ face significant challenges when it comes to managing risk in relation to infrastructure in developing countries. Key among them are political, macroeconomic, FX and interest-rate risks.

Current risk-management instruments are inadequate. Investors report that they are excessively expensive, suffer from a lack of liquidity and are inflexible. Consequently, investors simply avoid the asset class.

Market makers in hedging instruments should be scaled up via IFI seed funding

IFIs have sought to respond to these issues. The most successful model to date has been to provide equity to seed-fund providers of hedging instruments. The best known of these is TCX, which was seeded-funded by a consortium led by FMO and provides FX- and interest-rate hedging futures (see Box 11).

Box 11 TCX provision of FX-hedging instruments

TCX was founded in 2007 with equity provided by a consortium of DFIs, various donors and microfinance investment vehicles (MIVs). Since then, it has leveraged its operations in private lending and the interbank market.

It is a market maker in illiquid developing-market currency instruments in more than 70 currencies. Many of these currencies have limited or no effective private markets in such instruments and TCX has acted as a vital provider to investors and financial institutions.

TCX has developed an innovative product range. For example, they offer 15-year swaps and forwards in all currencies and USD-deliverables. They have also developed the use of FX swaps for USD bonds issued by donors with AAA-ratings (for example the IFC, ERBD and FMO), allowing them to provide a local currency bond to local investors. More than 20 such bonds have been issued, including in Myanmar Kyat, Papua New Guinea Kina and Tanzania shilling.

However, TCX’s model has disadvantages. It manages its own risk via portfolio diversification, but has suffered repeated losses, taking a \$64.9 million hit in 2008 and \$61.3 million in 2014 when emerging markets were disrupted. Donors see this as an inherent part of their business model but it could threaten sustainability.

TCX is also constrained by its risk limits which restrict a single currency exposure to 10% of the portfolio or approximately \$200 million. A capital injection would help alleviate this.

Overall, investors are positive about TCX’s role in facilitating FX hedging: it has helped to mobilise private capital and deepen the financial market in local currencies in many developing countries. TCX has also been responsive to their needs as well as providing instruments likely to assist in deepening local currency bond markets. One of our key recommendations is an expansion of TCX including further capital injections.

Source: TCX website; Chatham Financial, 2018; interview material

⁸ There are also considerable risks in relation to construction. In developed markets, these are typically managed through development-risk insurance. In developing countries, such risk insurance is far more difficult to obtain. Tackling this would ease another bottleneck in infrastructure project development. However, full discussion of such non-financial risks for construction firms and developers is beyond the scope of this paper.

Such entities have advantages. They pool hedging risk, so they can benefit from portfolio diversification and allow specialist provision of hedging instruments. However, they also have distinct disadvantages: there are a limited number of them and the main one, TCX, is relatively small. This makes diversification difficult and volatile market conditions have led to material losses for TCX and set limits on its risk exposures.

What's more, investors have said they would like to see a greater range of currencies, instruments (such as options and other derivatives) and products with longer tenure. TCX have addressed these concerns by offering a 15-year maturity on swaps and forwards in all currencies. Continuation of expansion of their offerings should be supported.

However, scaling up such TCX-type facilities would do away with many of those disadvantages, particularly in relation to portfolio diversification and facilitating greater product ranges. This could take several forms. At the most basic level, it would be good to see additional capital for TCX and other new entities

with a mandate to increase the range and tenure of instruments being offered.

As mentioned, there has also been criticism of the political-risk insurance offered by MIGA. Investors say it is expensive and inflexible and that making claims is unduly difficult. In this context, it may be appropriate for the IFIs to seed-fund new entities with a more commercial slant, tasked with creating more viable political-risk mitigation instruments and generating price competition with MIGA.

Finally, to generate better hedging instruments, we believe the IFIs should seek to partner with private institutions and leverage their intellectual capital in financial innovation and hedging techniques. The private institutions have led innovation in financial structuring and are highly experienced in managing risk and designing new instruments, including in exotic markets. Such innovation elsewhere has led to a rapid increase in liquidity, and a surge in new product design and market making in secondary markets. This could translate to the developing-market infrastructure sector.

Solution 5: Develop the domestic investor base for infrastructure assets

One of the critical components of infrastructure financing is a deep institutional investor base that intermediates domestic savings into asset classes, including infrastructure.

Deepen pension and insurance funds to mobilise local-currency investment

Development of such an institutional investor base in developing economies would not only provide a source of capital for infrastructure investment, but do so in local currencies, avoiding the ‘cardinal sin’ of foreign-currency debt. It would also provide funding that is relatively low cost and stable. These comparative advantages are illustrated in Table 1 (United Nations Economic Commission for Africa (UNECA), 2015; Tyson, 2015).

As noted in the table, international public and private finance bring considerable benefits. International public finance can offer the advantage of concessional cost and liquidity – although the concession is lost as countries transition from being LICs to MICs. International private finance offers the advantage of liquidity,⁹ but typically comes at a higher cost. However, both public and private international finance are predominantly provided in hard currency, creating FX risk for the host economies (Tyson, 2015).

This means that the mobilisation of domestic savings should form a central part of the medium-term solution to infrastructure financing as an attractive alternative to international capital. This could include pension and life-insurance funds, which offer contractual and committed forms of saving for households (Tyson, 2015).

A focus for middle-income policymakers

One caveat is that the mobilisation of domestic savings has a strong structural relationship with per capita income. This makes financing infrastructure via domestic savings a good prospect for MICs, but a less attractive option for lower-income countries, where the realistic timeframe for such mobilisation is longer (Tyson, 2015).

Consequently, policy approaches for MICs should focus more on the broad development of the pension and insurance sectors, including strong regulation and facilitating foreign entrants (Tyson, 2015).

However, LICs may wish to focus on supporting domestic savings mobilisation more broadly and on close partnerships between governments and domestic institutional investors. An example of how this has been done in Tanzania is discussed in Box 12.

As discussed, such partnerships can successfully mobilise domestic savings into infrastructure but this requires a strong regulatory environment and de-risking by the public sector. This ensures that assets remain an appropriate quality in order to meet the fiduciary responsibilities of institutional investors and ensures the long-term security of household savings.

This has a symbiotic relationship with broader financial market deepening

Broad financial-market development, the expansion of financial access and the development of well-regulated pension and insurance industries have a symbiotic relationship because domestic pension and insurance funds create demand for investment assets in local currencies.

These include government bonds and, as markets deepen, broad capital markets, such as listed securities and bonds. Efforts should be made to promote infrastructure as part of this virtuous circle of pension and insurance markets and related asset classes in local currencies.

Development agencies have already launched policy initiatives. For example, AfDB has established note programmes for infrastructure in local currencies in the region. Guarantco, an initiative by the Private Infrastructure Development Group, provides credit enhancement in the form of partial guarantees for local-currency loan financing or bond issuance in various African countries, including Kenya, Uganda, Nigeria, Chad and Tanzania. Such policy initiatives should be extended (Tyson, 2015).

9 This has not been the case in relation to bank lending since the global financial crisis of 2008 (Tyson and McKinley, 2014).

Table 1 Comparative advantages and disadvantages of various capital sources

	Stability ¹⁰	Local currency	Cost	Risk appetite	Conditionality	Liquidity in short term
Pension funds and life insurance	High	Yes	Low	Low	No	Lower ¹¹
International public institutions	High	No	Low ¹²	Medium ¹³	Yes	Lower ¹⁴
Domestic banks and capital markets	Medium	Yes	Medium	Medium	No	Lower ¹⁵
International commercial banks	Low	No	Medium	Low	No	Low ¹⁶
International capital markets and private funds ¹⁷	Low	No	High	High	No	High

Source: UNECA, 2015; Tyson, 2015

Box 12 Tanzania and pension-fund investment in infrastructure

Tanzania has seen growth in pension and insurance funds of 12% annually over the last decade. As of 2017, there were 29 insurance and pension companies active in the sector, with estimated assets of \$5 billion.

The sector is regulated by the Tanzania Insurance Regulatory Authority, with oversight by the Bank of Tanzania. Regulations require capital and liquidity buffers, upper limits on investments in certain asset classes and matching requirements on long-term assets and liabilities.

Pension funds have been predominantly invested in government bonds, real estate and listed equities. However, in 2017, Tanzania announced pension reforms. These included merging multiple public pension funds into a single fund and broadening allowable investment classes to include infrastructure.

Investments have been made by both public and private pension funds in the sector. They include a joint investment to build the Kigamboni Bridge, with pension funds taking a 60% stake and the government, 40%. Infrastructure assets include preparation in the road, rail and energy sectors, including co-financing with the government and Chinese investors.

Concerns have been raised about the quality of some assets, however. Managing these risks will be an important factor in ensuring the reforms deliver both good returns for pension customers and make a significant contribution to financing national infrastructure development.

Source: Interview material; Bank of Tanzania; Tanzania Insurance Regulatory Authority; *The East African*; Tanzania Invest

10 This relates to being pro-cyclical, involving cross-border capital flows and/or predetermined exit timing.

11 Markets require further deepening over the medium term before significant funds will be raised.

12 This is typically in hard currency. It can – subject to liquidity – be hedged using, for example, FX forwards or options. However, the cost of this can be prohibitive and requires strong debt-management capabilities in domestic institutions.

13 This is due to concessional lending terms, which decline as countries transition from low- to middle-income status.

14 This is due to slow disbursement.

15 This is also the case for life insurance.

16 Lending by international banks to developing countries has decreased significantly following the financial crisis of 2007 to 2008 in advanced economies and subsequent financial regulatory reforms. This has resulted in banks reducing their exposure to sub-Saharan Africa to meet higher capital thresholds and in response to Basel III risk weightings for lending to developing countries. As a result, bank lending to the region is at a historical low and not expected to recover (Tyson and McKinley, 2014).

17 This includes private equity funds, mutual funds, venture capital funds and sovereign wealth funds, all of which are currently active in sub-Saharan Africa.

Conclusions and policy recommendations

The goal of mobilising ‘billions to trillions’ of finance for developing country infrastructure is challenging. However, it is feasible if the development community acts with boldness and imagination and in close partnerships and coordination.

This will require different institutions to lead and coordinate different aspects of the agenda. In relation to this, we highlight the following critical roles and the institutions who are most likely to lead them:

- **IFIs need to re-orientate their mandates to have greater focus on delivering in their areas of key expertise and their ‘value-add’ in project preparation and early stage financing.** They also need to continue to assume the leading role in financing infrastructure in LICs. In addition, they need to continue to provide technical advice and make their internal data publicly available.
- Complementing this, **IFIs need to move to an ‘originate-to-distribute’ model for mature infrastructure assets** and be at the forefront of the transition from publicly-originated infrastructure assets being held predominantly on IFIs’ balance sheets to a model where they are securitised or syndicated into portfolio assets for private investors. This is a significant change for IFIs and requires careful assessment of its implications but it is essential if IFIs are to deliver on their mandate to mobilise material private investment.
- **IFIs, investors and regulators need to partner on developing financing vehicles** that can deliver on the needs of investors and, particularly, of institutional investors. This partnership is needed because institutional investors offer the scale of financing that is needed but their needs are complex and involve careful balancing of risk-taking in infrastructure with their fiduciary and regulatory responsibilities. Achieving this goal will require not only partnership

across individual financing vehicles but also regulatory reform to ensure that these dual needs are met.

- Greater innovation is needed in relation to financing vehicles and hedging instruments. **IFIs and private financial institutions need to act to create and support such innovations**, including providing seed capital to develop and extend promising ideas and current successful prototype business models, such as in FX hedging and political risk insurance.
- Finally, there needs to be a holistic approach to infrastructure financing, including development of domestic financial markets in developing countries. This includes **regulatory reform for pension and insurance institutions** to enable funds to invest in infrastructure whilst retaining appropriate fiduciary standards. It also requires governments and IFIs in LICs to ensure that any such investments are carefully scrutinised and, if needed, de-risked to ensure the long-term safety of household savings.

As noted this is a challenging agenda. Optimistically, the G20 Argentinian presidency has assumed this role. We finish this paper with a quote from their statement supporting this policy goal:

‘Mobilizing private investment toward infrastructure is crucial ... This is a win-win objective and it requires international cooperation... Developing infrastructure as an asset class holds great promise to channel the savings of today into public infrastructure, efficient transportation services, basic sanitation, energy flows and digital connectivity that will make each person of today a global citizen and worker of tomorrow.’

We welcome the G20 Argentinian presidency’s leadership and urge support and participation in helping them deliver their promise.

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